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ABSTRACT

As part of a preliminary investigation of microcomputer systems' uses and policies at higher education institutions, a questionnaire was sent to the computer center director at 69 land grant institutions in the spring of 1982. Land grant institutions were chosen because they are a fairly small, well-defined group of higher education institutions; they represent all geographic regions of the United States; and they include a wide range of student populations. Questions focused on (1) numbers of general purpose, stand-alone, nondedicated microcomputer systems; (2) microcomputer purchase, use, and maintenance; and (3) types of university policy. The 54 responses received (a 78% return) indicate that only a small percentage of institutions have a microcomputer policy for purchase, maintenance, and use. Numbers of microcomputer systems were related to computer center help in purchasing and maintaining equipment, in presenting microcomputer information, and in developing software for other departments. Those institutions with greater numbers of systems reported more involvement in these areas. Numbers of microcomputer systems and of institutions offering coursework in microcomputer programming and microcomputer applications were also related. This report includes the survey questionnaire and six data tables. (LMM)

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SUMMARY OF A NATIONAL SURVEY OF MICROCOMPUTER SYSTEMS AT LAND GRANT INSTITUTIONS

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Summary of a National Survey of Microcomputer Systems at Land Grant Institutions

Introduction

Microcomputer systems, i.e., microcomputers with keyboards and video displays, have been available for approximately five years. The advance in technology in this area, especially in the last eighteen months, has produced equipment that is becoming increasingly attractive to individual departments at institutions of higher education. Partly because of the short period of time microcomputers have been available, information about their uses and policies affecting them is not generally available.

In order to begin to gather information on this subject, a questionnaire was sent to the computer center director at each land grant institution in the spring of 1982. Land grant institutions were selected because they were a fairly small, well defined group of higher education institutions, they represented all geographical regions of the United States including Alaska, Hawaii and Puerto Rico, and they included a wide range of student populations. Because of the diversity in locality and size, information collected by the survey may be of interest to other institutions.

The Survey

A questionnaire was sent to the computer center director at each of the of sixty-nine land grant institutions in order to collect information on microcomputer policies and uses. Questions focused on numbers of general purpose, stand-alone, nondedicated microcomputer systems, microcomputer purchase, use and maintenance and the types of policy in use at these universities. An initial mailing plus two follow-up mailings resulted in fifty-four responses, a 78% return.

Student populations at the the sixty-nine land grant institutions ranged from approximately 1,100 to over 55,000 with a median of 16,992. The fifty-four institutions that responded ranged from under 2,000 to over 55,000 with a median of 16,746. Of the fifteen institutions not responding, six had student populations over 25,000 and five had populations under 5,000. All but four of the institutions between these extremes returned a completed questionnaire.

The respondent institutions were grouped by presence or absence of a policy, by region and by the numbers of general purpose microcomputers to see if these groupings might provide useful information. The absence or presence of a microcomputer policy appeared to be somewhat related to the size of the institution and the reported number of general purpose microcomputer systems. All geographical regions

were represented in the returned questionnaires, but little additional information was gained when responses were grouped by in this manner. Grouping by numbers of microcomputers appeared to provide the most useful information.

Microcomputer Numbers

Forty-six institutions (85%) owned general purpose microcomputers, seven institutions (13%) planned to purchase this type of equipment and one institution had no purchase plans. Six of the seven planning to purchase general purpose microcomputers had student enrollments of less than 10,000 and the seventh had an enrollment of approximately 22,000. The institution not planning to acquire general purpose microcomputers had an enrollment of under 10,000.

Forty-two institutions (78%) reported estimated numbers of microcomputers. These ranged from one to 230 with a median of seventy-three. The four institutions that reported the presence of microcomputers on campus but no estimated number had student enrollments over 25,000. Two of the four computer center directors commented that information about microcomputers on campus was difficult to obtain.

Student population and numbers of general purpose microcomputer systems appear to be related. The median population for institutions with no general purpose

microcomputer systems systems was 5,602. For institutions with one through ninety-nine microcomputers, the median student population was 12,000 and the median number of microcomputer systems was thirty. Institutions with 100 through 199 microcompters had a median population of 22,298 and a median number of 115 microcomputer systems. Those with 200 through 299 microcomputer systems had a median student population of 22,165 and a median number of microcomputer systems of 200. Those not reporting numbers of microcompduters had a median student enrollment of 42,233.

Microcomputer Policy

Eight institutions (15%) reported a microcomputer policy, two stated that a microcomputer policy was being considered, and 43 (80%) reported no microcomputer policy. One institution did not check a policy category and did not own or plan to purchase microcomputer systems.

Institutions with a microcomputer policy had a median student population of 13,496 and a median of forty-three general purpose microcomputer systems. Six of the eight institutions reported owning between two and 120 general purpose, stand-alone, non-dedicated microcomputer systems. The remaining two institutions planned to purchase this type of system at a later time. All eight institutions commented on purchasing procedures and three sent additional materials. Microcomputer policy appeared to focus on purchase and maintenance of microcomputers and microcomputer

coordination with central computing facilities.

Institutions with no microcomputer policy had a median student population of 16,500 and a median of seventy-eight systems. Of the forty-three institutions that checked "No" for policy, thirty-five reported between one and 230 microcomputer systems. Four institutions planned to purchase microcomputer systems at a later time and four reported microcomputer systems on campus but did not include an estimate of the number.

Two institutions were considering microcomputer policy. One had an enrollment over 20,000 and reported approximately 100 microcomputer systems on campus and the other had an enrollment under 2,000 and reported six microcomputer systems.

Microcomputer Purchase

Computer center involvement in department purchasing of microcomputer systems ranged from supplying information to purchasing equipment for departments. Computer centers at institutions with fewer microcomputer systems were less involved in purchasing activities than those institutions with greater numbers of microcomputer systems. Table I summarizes the information about computer center involvement in microcomputer system purchases by numbers of microcomputer systems located on campus.

Table I

Computer Center Assistance in Departmental Microcomputer Purchases at Land Grant Institutions

Computer Center	Microcomputers 0	1-99	100-199	200-299	Unspecified	Overall
Supplies Information	5 (62.5%)	21 (91.3%)	13 (92.9%)	5(100.0%)	3 (75.0%)	47 (87.0%)
Acts as Purchasing Agent	1 (12.5%)	7 (30.4%)	5 (35.7%)	1 (20.0%)	1 (25.0%)	15 (27.8%)
Purchases Micro-puters for Departments	0 (0.0%)	6 (26.1%)	3 (21.4%)	4 (80.0%)	1 (25.0%)	14 (25.9%)
Total Institutions	8	23	14	5	4	54

Computer center directors at forty-seven institutions (87%) reported that they assisted departments with information regarding microcomputer purchase. Over 90% of the computer centers that estimated numbers of microcomputer systems on campus supplied this service.

Sixty-one percent of the institutions replied affirmatively to the question, "Is your institution advocating that departments plan their own purchasing and maintenance of software and hardware?" The amount of help departments received from computer centers in the puchase of equipment reflected this response since only fifteen computer centers (28%) acted as purchasing agents for other departments and fourteen computer centers (26%) purchased microcomputers for other departments.

Fifteen institutions commented on purchasing procedures at their institutions, although only eight checked yes on the policy question. Six states, North Dakota, Montana, Washington, Connecticut, Missouri, and Kentucky required state approval for the purchase of computing equipment by institutions of higher education. Institutions in five of the six states checked "Yes" for microcomputer policy. Six institutions in other states also reviewed all computer purchases as a matter of course but only two of the institutions reported having a microcomputer policy. One institution with a policy stated that microcompter purchases were reviewed only if the purchase price was over $10,000.

One institution with no policy commented that microcomputer purchases were reviewed only if the equipment was intended to access central computing facilities. One of the two institutions planning a microcomputer policy was considering a plan that would include department responsibility for microcomputer purchases and maintenance and computer center responsibility for coordination and approval of purchases.

Four institutions attached additional materials regarding microcomputer purchasing procedures. Three had checked "Yes" for policy. Each included requirements, such as justification for purchase and provisions for maintenance, which had to be met if purchase of the equipment was to be approved.

Microcomputer Maintenance

Numbers of microcomputer systems and computer center involvement in providing microcomputer maintenance services to departments appeared to be related. Table II lists computer center involvement in the maintenance of microcomputer systems by numbers of microcomputers.

Computer centers at twenty-three institutions (43%) attempted to employ personnel capable of servicing microcomputers. Thirty-five percent of the institutions with less than 100 microcomputer systems employed personnel with microcomputer expertise, while 100% of the computer centers at institutions with 200 or more employed this type

Table II

Computer Center Assistance in Microcomputer

Maintenance at Land Grant Institutions

Computer Center	Microcomputers 0	1-99	100-199	200-299	Unspecified	Overall
Employs Personnel with Expertise	0 (0.0%)	8 (34.8%)	8 (57.1%)	5(100.0%)	2 (50.0%)	23 (42.6%)
Purchases Repair Supplies	2 (25.0%)	5 (21.7%)	7 (50.0%)	4 (80.0%)	2 (50.0%)	20 (37.0%)
Maintains Micro-computers by:						
Repair Service	0 (0.0%)	4 (17.4%)	7 (50.0%)	4 (80.0%)	2 (50.0%)	17 (31.5%)
Service Contract	0 (0.0%)	1 (4.3%)	5 (35.7%)	3 (60.0%)	1 (25.0%)	10 (18.5%)
Total Institutions	8	23	14	5	4	54

of personnel. Twenty computer centers (37%) purchased equipment and supplies necessary to service microcomputers. Twenty-two percent of the institutions with less than 100 microcomputers purchased supplies as opposed to 80% of the institutions with 200 or more.

Seventeen computer centers (32%) serviced microcomputers. Thirty-two percent of the computer centers repaired microcomputers for other departments and 19% provided repair service through service contracts. None of the computer centers offering service contracts were located at institutions with a policy although two of the computer centers maintained microcomputers for other departments through a repair service and two others planned to offer this service in the future. No institution funded microcomputer repairs by computer centers through a central funding process.

Other maintenance procedures reported as being used by departments included off campus service contracts, 25 institutions; maintenance by the department owning the equipment, 22 institutions; off campus repair, 8 institutions; and maintenance by other departments on campus, 4 institutions.

Microcomputer Use

Over half the institutions used microcomputers for research, instruction and administrative purposes.

Forty-two institutions (78%) used them for instruction, 35 (65%) used them for research and 28 (51%) used them for administrative functions. Only eleven institutions (20%) used them for service functions. One institution commented on the planned installation of microcomputer clusters for instruction in the near future, given adequate funding.

Software Used on Campus

Thirty-four computer center directors (63%) reported that they thought the majority of microcomputer software used on their campus was probably purchased rather than developed in-house.

Microcomputer Education and Information

User's Group. Twenty-two institutions had or planned to have a microcomputer user's group. The number of microcomputer systems on campus and the presence of a user's group appeared to be related. Thirty percent of the institutions with one through ninety-nine microcomputers, 50% of the institutions with 100 through 199 microcomputers, and 60% of the institutions with 200 or more microcomputers reported the presence of a user's group on campus.

Computer Center. Numbers of microcomputer systems and computer center involvement in developing microcomputer software and providing seminars and workshops about microcomputers appeared to be related. Table III lists numbers of computer centers offering seminars and

Table III

Numbers of Computer Centers Developing Software and Offering Microcomputer Seminars at Land Grant Institutions

Computer Center	Microcomputers 0	1-99	100-199	200-299	Unspecified	Overall
Develop Software	0 (0.0%)	1 (4.3%)	6 (42.9%)	3 (60.0%)	0 (0.0%)	10 (18.5%)
Seminars	2 (25.0%)	8 (34.8%)	6 (42.9%)	4 (80.0%)	3 (75.0%)	23 (42.6%)
Topic:						
Programming	1 (12.5%)	9 (39.1%)	6 (42.9%)	3 (60.0%)	3 (75.0%)	22 (40.7%)
Software	1 (12.5%)	5 (21.7%)	5 (35.7%)	2 (40.0%)	1 (25.%)	14 (25.9%)
General	0 (0.0%)	3 (13.0%)	2 (14.3%)	1 (20.0%)	1 (25.0%)	7 (13.0%)
Maintenance	0 (0.0%)	1 (4.3%)	2 (14.3%)	1 (20.0%)	0 (0.0%)	4 (7.4%)
Total Institutions	8	23	14	5	4	54

workshops. Ten computer centers (19%) developed software for other departments. Twenty-three computer centers (43%) offered seminars or workshops about microcomputers. The most common topic was programming with twenty-two computer centers (41%) offering this type. Commercial software applications were second with fourteen computer centers (26%) offering them and general microcomputer information was third with seven computer centers (13%) offering seminars in this area. Only four computer centers (7%) offered seminars or workshops on microcomputer maintenance.

Regular Coursework. Regular coursework offerings in microcomputer programming and microcomputer applications and the number of microcomputers on campus appeared to be related. Table IV lists the numbers of institutions offering these types of courses by numbers of microcomputers. Thirty-two institutions (59%) offered one or more courses in microcomputer programming. Departments reported as offering programming courses were computer science, twenty-one institutions; electrical engineering, seventeen; business, seven; education, five; other engineering departments, four; mathematics, four; agriculture, two; and chemistry, computer center, continuing education and extension, one each. Thirteen institutions (24%) offered courses in microcomputer applications. Departments that were reported as offering courses in microcomputer applications were computer science, five institutions; education, five; electrical engineering, four;

Table IV

Numbers of Land Grant Institutions Offering Microcomputer Coursework

Department Coursework	Microcomputers 0	1-99	100-199	200-299	Unspecified	Overall
Programming	2 (25.0%)	13 (56.5%)	10 (71.4%)	4 (80.0%)	3 (75.0%)	32 (59.3%)
Application	0 (0.0%)	3 (13.0%)	5 (35.7%)	3 (60.0%)	2 (50.0%)	13 (24.1%)
Total Institutions	8	23	14	5	4	54

business, three; and chemistry, computer center, continuing education, mathematics, music, and physics one each. As numbers of microcomputers increased, microcomputer coursework became more common.

Access to Central Computing Facilities.

Presence of microcomputer policy appeared to have a bearing on the ability to access central computing facilities with a microcomputer. Table V summarizes information on access to the central computer by hardwire and modem for institutions wich a policy and with no policy. Thirty-five institutioons (65%) reported that microcomputers could access central computing facilities with either telephone modems or with direct wiring. However, direct wiring was much less common on campuses with no policy. Only 16% of the institutions without a policy reported that microcomputer systems could generally access central computing facilities through direct wiring while 63% of the institutions with a policy reported that microcomputer systems could access the central computer by direct wire. Dial-up ports which allowed access to the central computer by microcomputer systems or other equipment through telephone modems were as common at institutions with a policy as those without.

Wiring to Access Central Computing Facilities

Forty-four institutions (82%) were wiring or planned to

Table V

Numbers of Land Grant Institutions and Type of

Access to Central Computing Facilities

Institution	Policy Yes	No	Total
Access to Central Computer	5 (62.5%)	30 (69.8%)	35 (64.8%)
Direct Wire	5 (62.5%)	7 (16.3%)	12 (22.2%)
Telephone Modem	5 (62.5%)	27 (62.5%)	32 (59.3%)
Equipment Purchased by Computer Center	8(100.0%)	32 (74.4%)	40 (74.1%)
Total Institutions	8	43	54

wire existing buildings to the central computer and 33 (61%) were wiring or planned to wire new buildings. Table VI summarizes information on wiring existing and new buildings for central computer access. Several institutions checked the "No" category for new buildings and commented that no new building were being planned. Administrative offices, classrooms, research labs and faculty offices were checked most often as the room types to be wired. Dormitories were checked less often.

Example of a Microcomputer Lab

One institution described the functions of the microcomputer lab located on campus. The lab kept an inventory of all microcomputer hardware and reviewed all purchase proposals to check for maintenance provisions, monitored and controlled all software purchases and published a directory of available software on campus, provided information on microcomputers and maintained a microcomputer reference library, tested and evaluated new hardware and software, bought common microcomputer supplies for other departments and acted as a training center for faculty, staff and students.

Summary

A small percentage of institutions reported the presence of a microcomputer policy for purchase, maintenance and use. In general institutions with a policy had a lower

Table VI

Numbers of Land Grant Institutions and

Access to Central Computing Facilities

Institutions	Existing Buildings	New Buildings
Wiring		
Yes/Planned	44 (81.5%)	33 (61.2%)
Room Type:		
Administration	38 (70.4%)	27 (50.%)
Classroom	36 (66.7%)	25 (46.3%)
Research	35 (64.8%)	27 (50.0%)
Faculty Office	31 (57.4%)	25 (46.3%)
Dormitory	12 (22.2%)	6 (11.1%)
Other	5 (9.3%)	5 (9.3%)

student population and fewer general purpose microcomputer systems than institutions reporting no policy. Microcomputer policies reported by computer center directors appeared to center around management functions such as purchase and maintenance of the equipment rather than around microcomputer use.

Numbers of microcomputer systems and computer center help in purchasing and maintaining equipment, in presenting information about microcomputers and in developing software for other departments appeared to be related. Those institutions with greater numbers of microcomputer systems reported more involvement in these areas. Numbers of microcomputer systems and numbers of institutions offering coursework in microcomputer programming and microcomputer applications appeared to be related. Microcomputer programming courses were more common and were offered more often by computer science and electrical engineering departments. Microcomputer applications coursework was less common and was offered more often by computer science or education departments.

The information gathered by the survey was general in nature. Little information was obtained regarding specific uses of microcomputer systems in instruction, research, service and office functions or about the development of university-wide or college-wide microcomputer clusters for instructional use. The study of these topics should be

helpful to institutions of higher education as they investigate the many ways microcomputers can be of assistance to them.

LAND GRANT INSTITUTION

MICROCOMPUTER USE

Name of Institution_____Land Grant? ___Yes ___No

Name of Person Completing Form_____

Position or Job Title_____

FOR PURPOSES OF THIS STUDY, A MICROCOMPUTER IS DEFINED AS A COMPUTER WITH A MINIMUM OF 4K RANDOM ACCESS MEMORY (RAM) AND COSTING LESS THAN $15,000.

1. Does your institution have stand alone, nondedicated, general purpose microcomputers? ____Yes ____No ____Planned
   If yes, approximate number _____(total)
   Number of microcomputers used primarily for:____Research ____Instruction
   ____Office management/administration ____Service ____Other
   (specify)_____

2. Can microcomputers generally access the central computing facility?
   ____Yes ____No
   If yes, number of microcomputers hardwired to facility: _____
   Number of available dial up ports: _____

3. Is your institution studying the feasibility of constructing work stations on campus? ____Yes ____No ____Planned

4. Is your institution advocating that departments plan their own purchasing and maintenance of microcomputer hardware and software? ____Yes ____No

5. Are new buildings being wired for access to the central computer? ____Yes ____No ____Planned
   If yes, which building types? ____Office (administration) ____Office (Faculty) ____Classroom ____Research lab ____Dormitory ____Other (specify)_____

6. Are existing buildings being wired for access to the central computing facility? ____Yes ____No ____Planned
   If yes, which building types? ____Office (administration) ____Office (faculty) ____Classroom ____Research lab ____Dormitory ____Other (specify)_____

7. Does the Computer Center purchase microcomputers to be used by other departments? ____Yes ____No

8. Is the Computer Center used as a microcomputer purchasing agent for other departments on campus? ____Yes ____No ____Planned
   If yes, must departments purchase microcomputers through the Computer Center? ____Yes ____No ____Planned

9. Does the Computer Center assist other departments with information regarding microcomputer purchase? ____Yes ____No

10. Is the Computer Center acquiring modems and other hardware necessary to enable microcomputers to access the central computing facility? ____Yes ____No ____Planned

11. Is the Computer Center purchasing equipment and supplies necessary to service microcomputers? ____Yes ____No ____Planned

12. Does the Computer Center attempt to employ personnel capable of servicing microcomputers? ____Yes ____No

13. Does the Computer Center service and maintain microcomputers for other departments? ____Yes ____No ____Planned
If yes, is this service automatically funded through a central funding process? ____Yes ____No
Do individual departments purchase service contracts from you? ____Yes ____No
Do individual departments purchase repair service from you? ____Yes ____No

If no, how do departments maintain their microcomputers? ____Service contract, vendor ____Department's personnel, ____Other (specify)_____

14. In your opinion, is the majority of microcomputer software used on campus developed in-house or purchased? ____Developed ____Purchased

15. Does the Computer Center develop microcomputer software for other departments? ____Yes ____No ____Planned

16. Is there a Microcomputer Users Group on campus? ____Yes ____No

17. Does the Computer Center offer seminars/workshops about microcomputers? ____Yes ____No ____Planned
If so, which areas? ____Commercial software applications ____Programming ____Microcomputer maintenance ____Other (specify)_____

18. Does your institution offer a course in microcomputer programming? ____Yes ____No ____Planned
If yes, which departments offer these courses?

19. Does your institution offer a course in microcomputer user applications? ____Yes ____No ____Planned
If yes, which departments offer these courses?

20. Does your institution have a formal policy regarding purchase, use and maintenance of microcomputers on your campus? ____Yes ___No
If yes, briefly state the policy, or attach a copy.

If you think there are other areas of microprocessor management that might be important in the future, please comment on the back.

Would you like a summary of the results? ____Yes ____No
If so, please indicate your current address.

Thank you for your time.

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